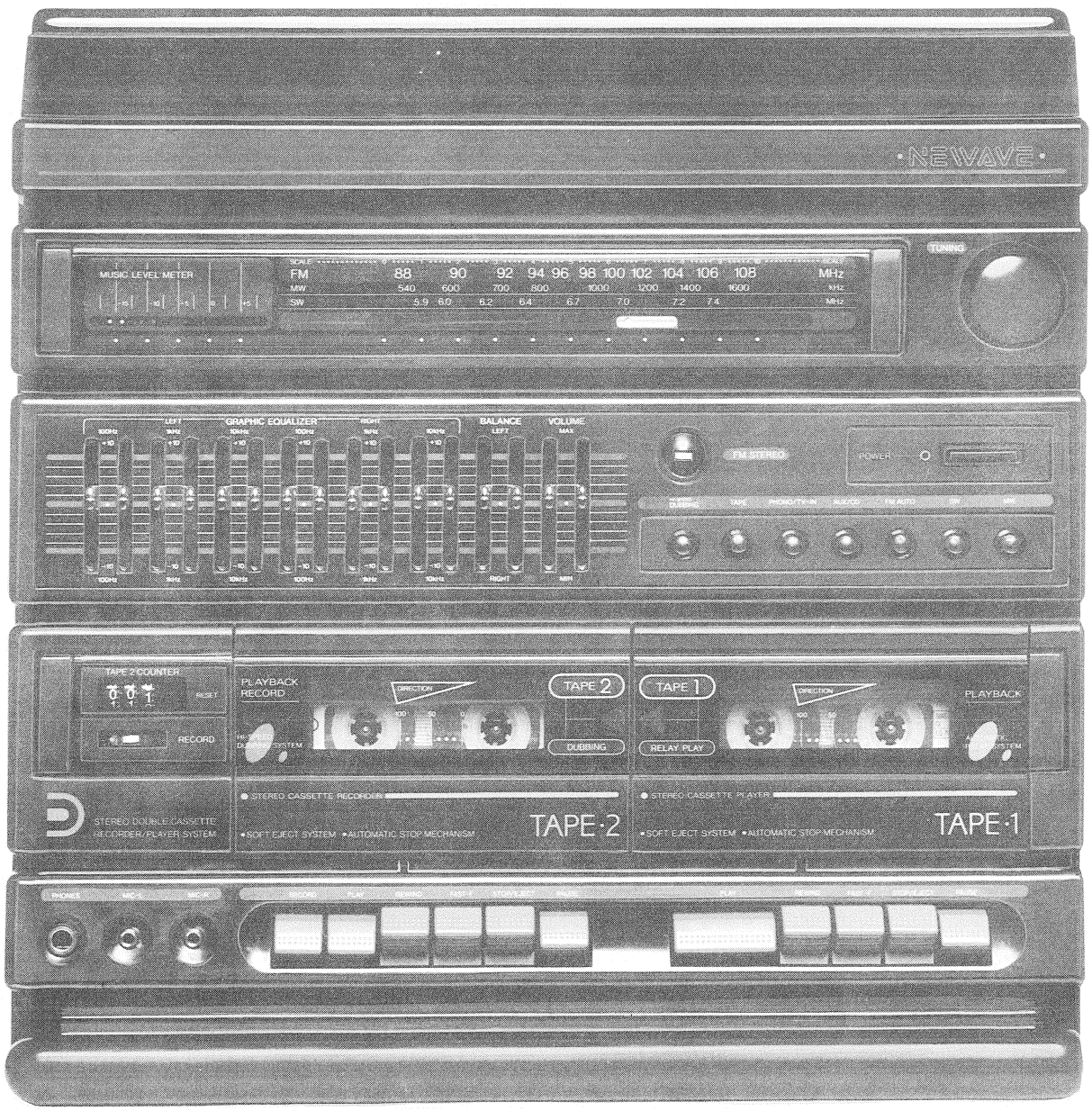
Serviceanweisung
Service manual

Ident-Nr. 36135

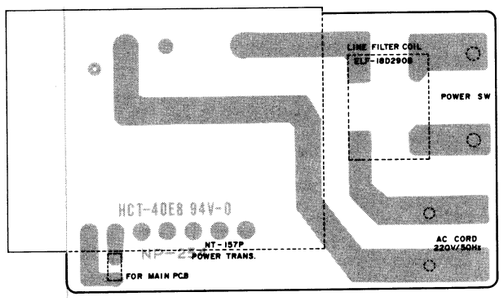
MIDI 2300



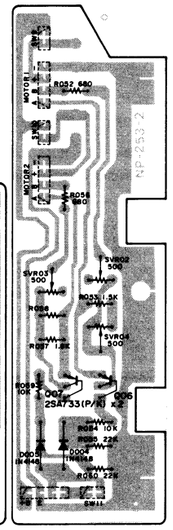
Platinendarstellungen
P.C.B. diagrams

Leiterbahnseite
Bottom view

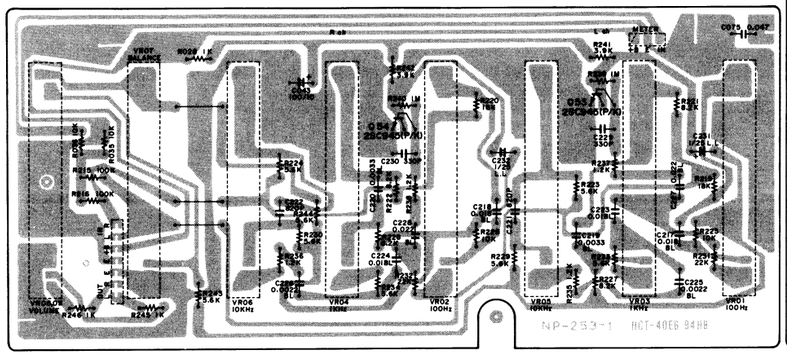
POWER TRANSFORMER P.C. BOARD



TAPE CONTROL P.C. BOARD

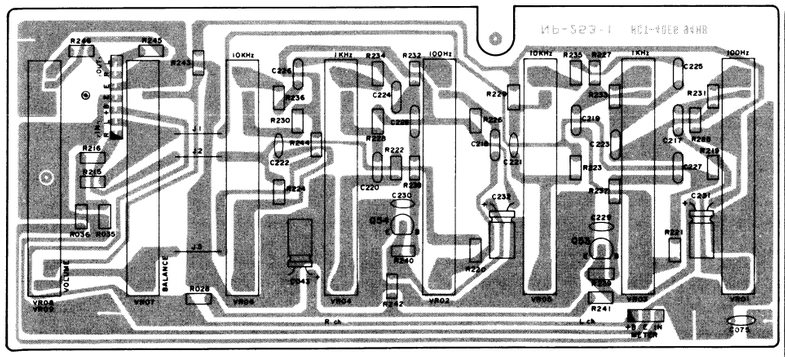


GRAPHIC EQUALIZER P.C. BOARD



Bestückungsseite
Top view

GRAPHIC EQUALIZER P.C. BOARD



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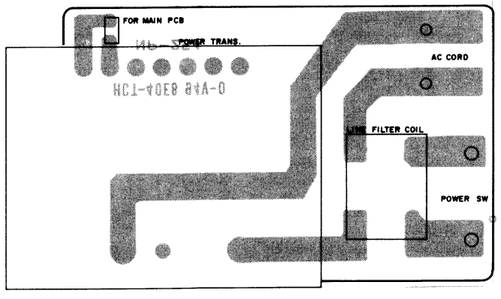

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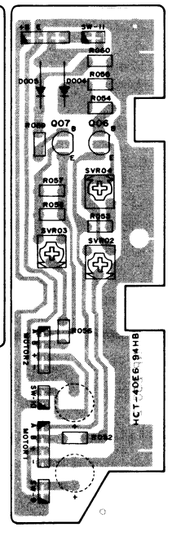
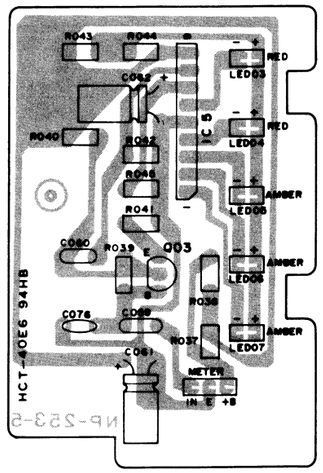
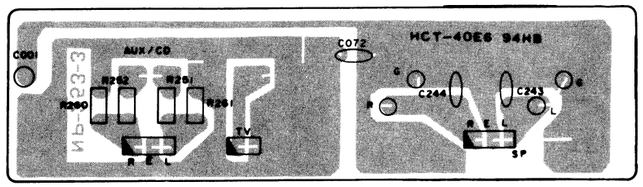


Leiterbahnseite
Bottom view

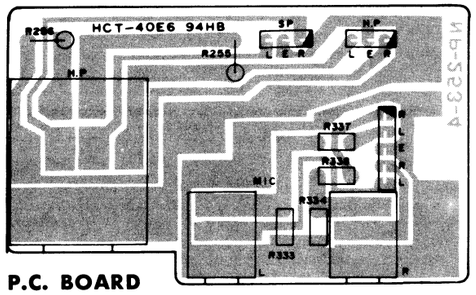
LEVEL IND P.C. BOARD



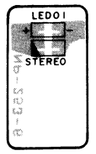
JACK COMP P.C. BOARD



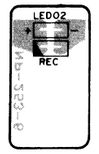
C. MIC JACK P.C. BOARD



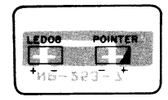
STEREO LED P.C. BOARD



REC LED P.C. BOARD

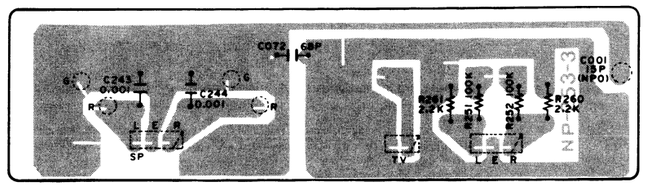


POINTER P.C. BOARD

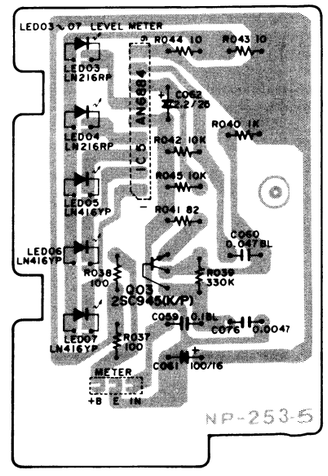


Bestückungsseite
Top view

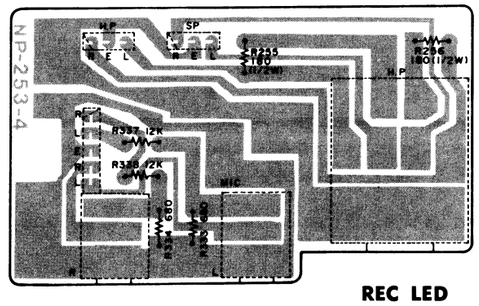
JACK COMP P.C. BOARD



LEVEL IND P.C. BOARD



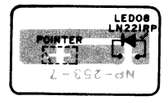
C. MIC JACK P.C. BOARD



STEREO LED P.C. BOARD

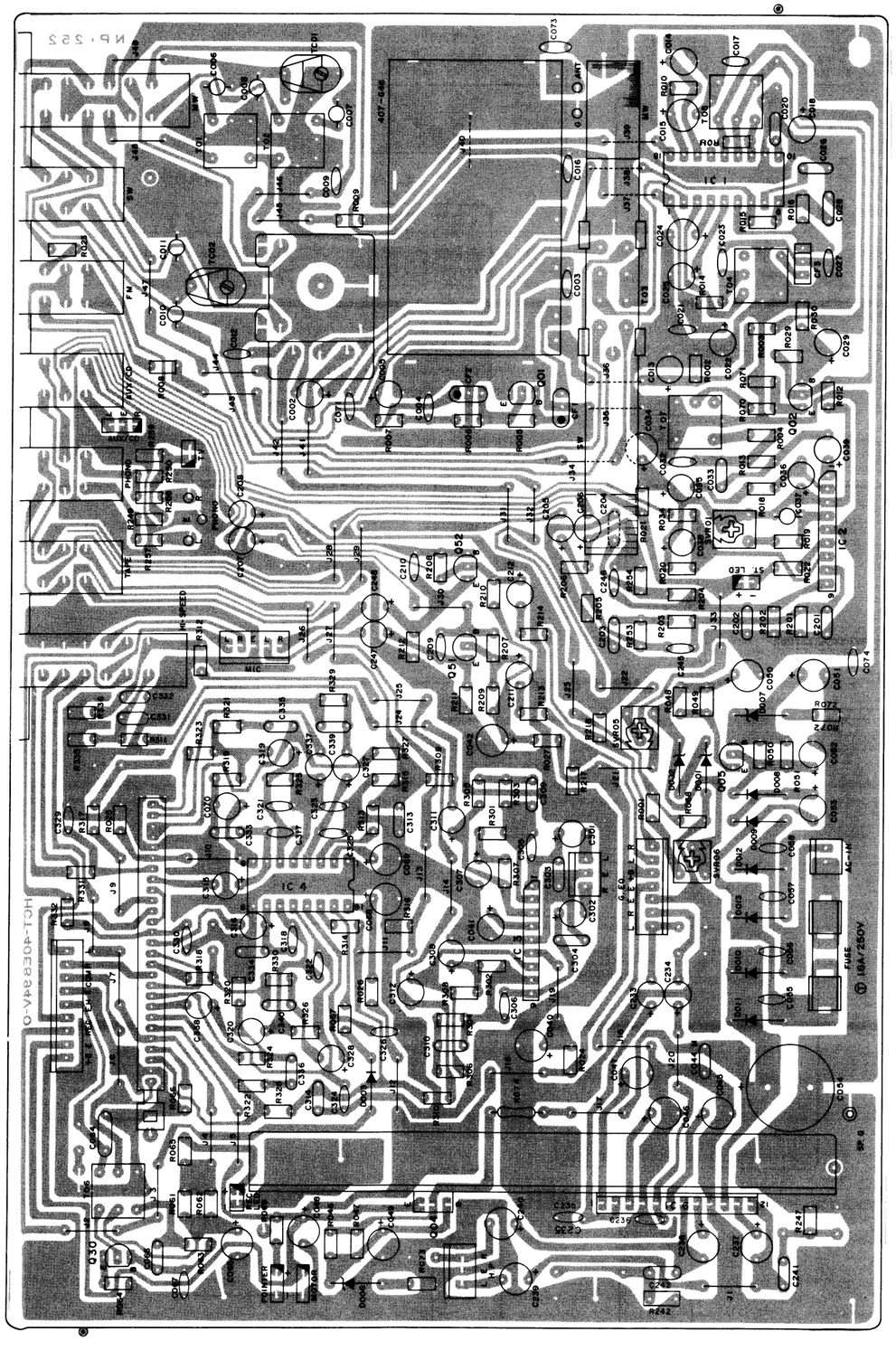
REC LED P.C. BOARD

POINTER P.C. BOARD

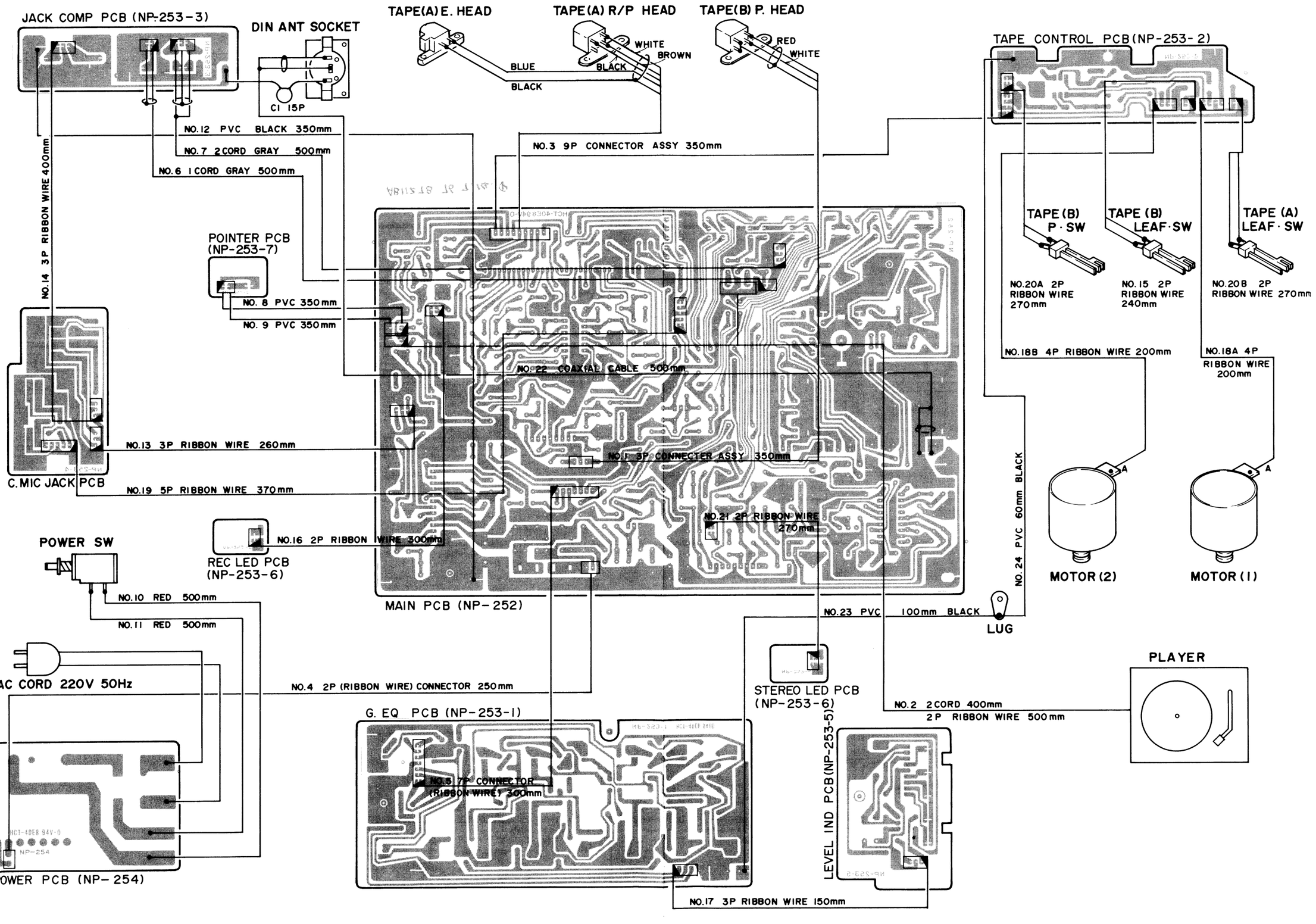


Grundplatine
Main P.C.B.

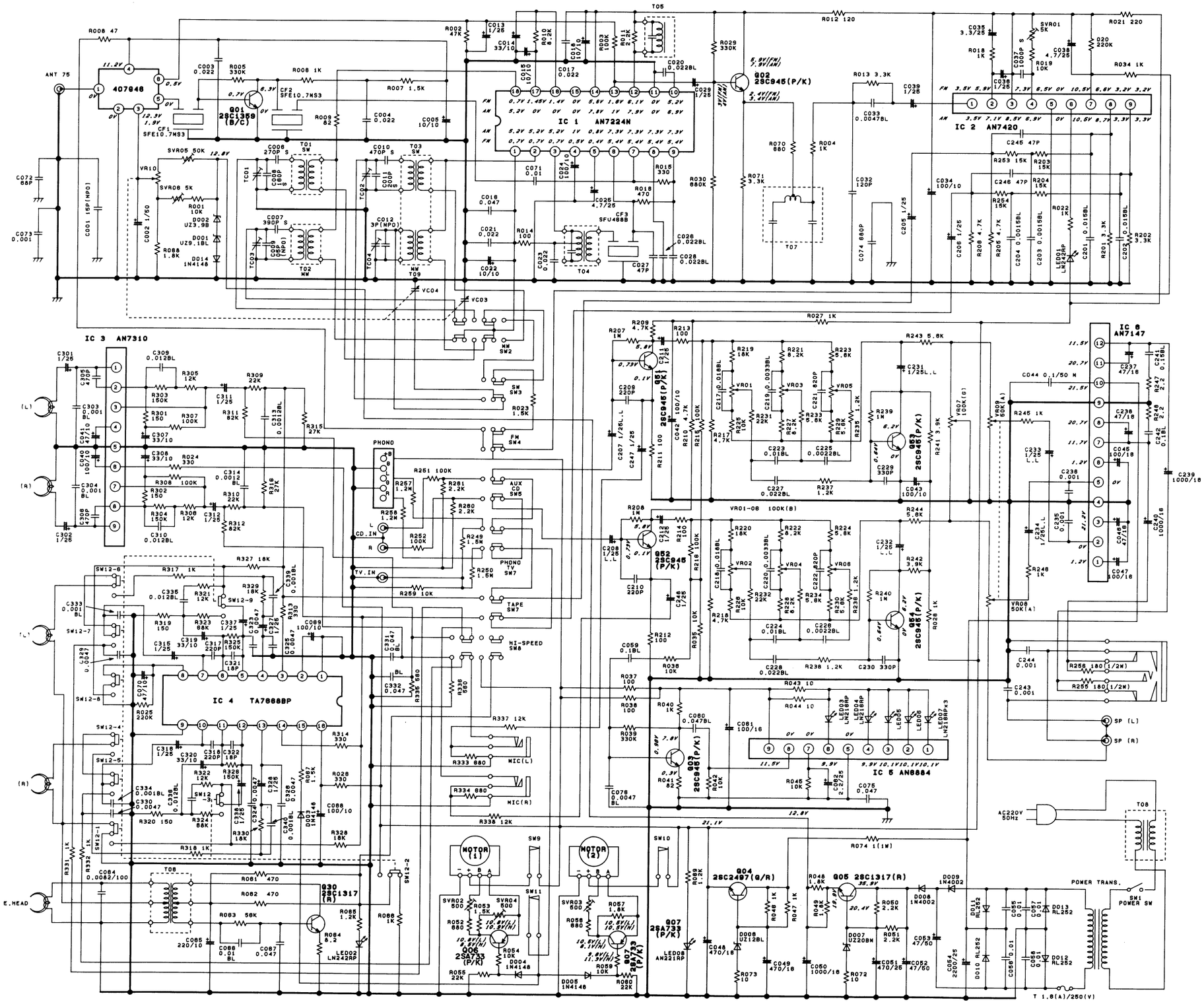
Bestückungsseite
Top view


NP-252
IC 4
TA7668BP
IC 3
AN7510
IC 2
AN7480
IC 6
AN7147
IC 1
AN7224N
FUSE T 1.6A/250V
1.6A/250V
AC-IN
ST. LED
HI-SPEED
AUX/CD
TUNER
PHONO
MOTOR
POINTER
FM
SW
MIC
REC OUT
REC SEL
TAPE
SPEAKER
2SC1359
2SA1015
2SD1047
2SC1317(R)
2SA1048(P/K)
2SC1345(P/K)
2SC1384(P/K)
2SC1815(BL/GR)
2SA1145(P/K)
2SC1345(P/K)
2SC1384(P/K)
2SC1815(BL/GR)
2SA1145(P/K)
2SC1317(R)
2SA1048

Verdrahtungsplan
Wiring diagram



Schaltbild
Circuit diagram



Bitte bei Ersatzteilbestellung die genaue Bezeichnung und **Ident-Nr. (siehe Typenschild)** des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and ident.-no. of unit (see silver rating label on the backside of unit) as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder

Bildschirmtext *317298 #

oder

Telefax: 08245/51326

Änderungen vorbehalten.
Modifications reserved.

Abgleichanweisung
Alignment procedure

INSTRUMENTS AND TOOLS

1. AM signal generator.
2. FM signal generator.
3. IF sweep generator with marker.
4. Oscilloscope.
5. Output meter (VTVM).
6. FM MPX signal generator.
7. Frequency counter.
8. Distortion meter.
9. Nonmetallic alignment tools.
10. Audio signal generator.

IMPORTANTS

1. Check the power source voltage.
2. Set the "function" switch to a band to be aligned.
3. The "volume" control should be at maximum (unless otherwise noted.)
4. Connect the negative leads of the signal source and output indicator to the chassis ground unless otherwise specified.
5. The signal input should be kept as low as possible to avoid AGC and AFC action.
6. The standard modulation is of 30% amplitude with 1,000 Hz signal for AM and is of 22.5 KHz deviation with 1,000 Hz signal for FM.

1. MW/SW ADJUSTMENT

CIRCUIT TO BE ADJUSTED	MEASURING INSTRUMENT ARRANGEMENT	STEP	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT
IF	AM sweep generator with loop antenna. Let the AM ANT coil close to generator ANT, and take out the signal from R201 (see Fig. 1)	1	455KHz (1000Hz mod.)	Tuning gang fully closed.	TC04 (AM IFT): Adjust for maximum output (455)
		2	Repeat 1 until no further improvement can be made.		
Band MW	AM signal generator with loop antenna. Output meter (VTVM) across 4-ohm load. (See Fig. 2.)	3	520KHz (1000Hz mod.)	Tuning gang fully closed.	T02 (MW OSC coil): Adjust for maximum output.
		4	1650KHz (1000Hz mod.)	Tuning gang fully opened	TC03 (MW OSC trimmer): Adjust for maximum output.
Band SW		3	5.8MHz (1000Hz mod.)	Tuning gang fully closed.	T01 (SW OSC coil): Adjust for maximum output.
		4	7.5MHz (1000Hz mod.)	Tuning gang fully opened	TC01 (SW OSC trimmer): Adjust for maximum output.
MW/SW		5	Repeat steps 3 and 4		
MW Tracking	AM signal generator with loop antenna. Output meter (VTVM) across 4-ohm load. (See Fig. 2.)	6	600KHz	Tune to signal	T08 (MW ANT coil): Adjust coil on ferrite core for maximum output.
		7	1400KHz	Tune to signal	TC03 (MW ANT trimmer): Adjust for maximum output.
SW Tracking		6	6MHz	Tune to signal	T03 (SW ANT coil): Adjust coil on ferrite core for maximum output.
		7	7.3MHz	Tune to signal	TC02 (SW ANT trimmer): Adjust for maximum output.
MW/SW		8	Repeat steps 6 and 7 several times.		

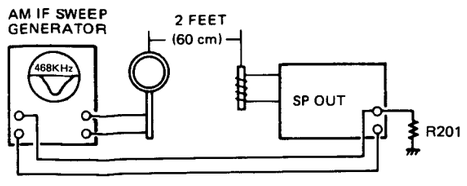


Figure 1. AM IF

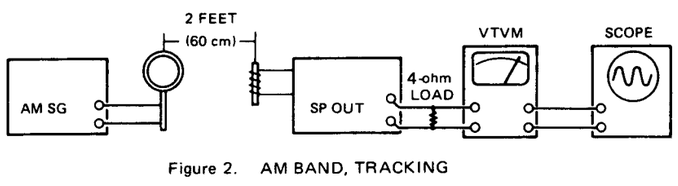


Figure 2. AM BAND, TRACKING

2. FM ADJUSTMENT

CIRCUIT TO BE ADJUSTED	MEASURING INSTRUMENT ARRANGEMENT	STEP	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT
IF	IF sweep generator with marker to FM TP1. Oscilloscope across R201 (See Fig. 3.)	1	10.7MHz	Tuning gang fully closed.	(FM IFT): IN 407G46 Adjust for maximum symmetrical response with 10.7MHz at center point.
		2	10.7MHz	Tuning gang fully closed.	T05 (FM IFT): Adjust for straightness and symmetry of "S" curve with 10.7MHz marked at zero crossover.
		3	87.5 MHz (1000Hz)	Repeat steps 1 and 2 as necessary to obtain maximum gain and selectivity.	
Local OSC	FM signal generator to FM ANT, terminal thru 75 ohm antenna matching network. Output meter (VTVM) across 4 ohm load. (See Fig. 4.)	4	87.35MHz (1000Hz mod)	Tuning gang fully closed.	SVR06 Adjust for maximum output.
		5	108MHz (1000Hz mod)	Tuning gang fully open	SVR05 Adjust for maximum output
		6		Repeat steps 4 and 5 several times.	

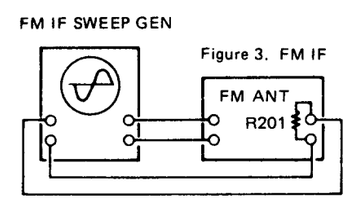


Figure 3. FM IF

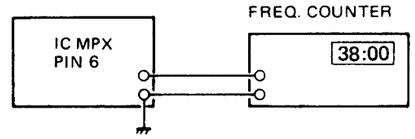


Figure 5. 38kHz PILOT ADJUSTMENT

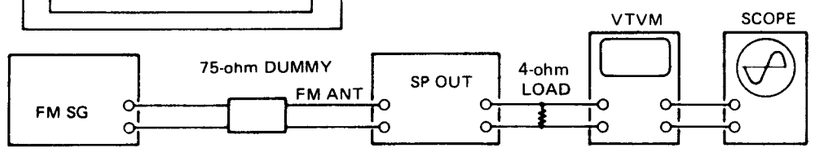


Figure 4. FM BAND, TRACKING

3. FM MPX ADJUSTMENT

CIRCUIT TO BE ADJUSTED	MEASURING INSTRUMENT ARRANGEMENT	STEP	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUSTMENT
38kHz	Frequency counter connected to MPX IC2 pin No. 6 (Fig. 5)	1	No need	No need	First make sure FM section is properly aligned. Adjust SVR1.5KB until frequency counter reads 38 kHz
Channel separation	FM MPX signal generator connected to FM75 ohm antenna matching network. VTVM to right and left channel speaker terminals across 4 ohm load. (See Fig. 6.)	2	98 MHz (1000Hz mod.)	98 MHz	Adjust SVR1.5KB until more than 30dB of separation is obtained between the right and left channels.

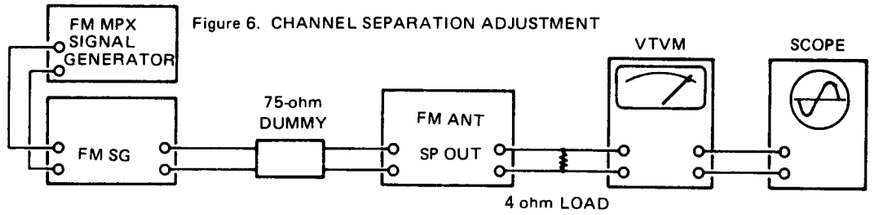


Figure 6. CHANNEL SEPARATION ADJUSTMENT

MECHANICAL ADJUSTMENT

1. Tape Speed Adjustment:
   a) Connect the equipments as per Fig. 7 to adjust the tape speed with test tape (Recorded at 3 KHz).
   b) Set Band Selector Switch to Tape and set volume at standard output level (50mW 4 ohm).
   c) Adjust semi-fixed resistor (Installed inside motor) for frequency counter indicated 3KHz.
2. Tape Azimuth Adjustment:
   a) Connect the equipments as per Fig. 7 to adjust the tape azimuth with test tape (Recorded at 6.3 KHz).
   b) Set Band Selector Switch to Tape and set volume at standard output level (50mW, 4 ohm).
   c) Adjust the azimuth adjustment screw of left side of Record/Play Head for maximum output.

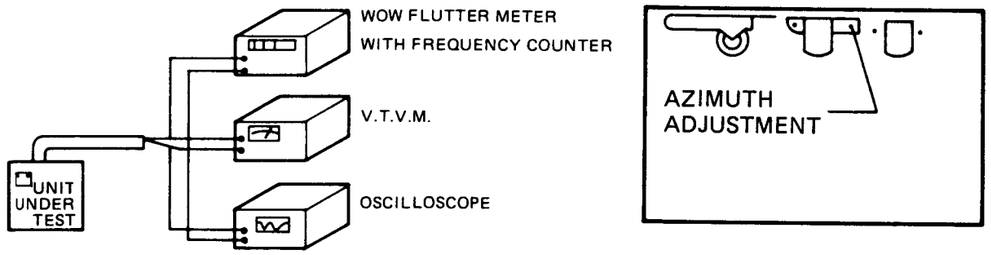
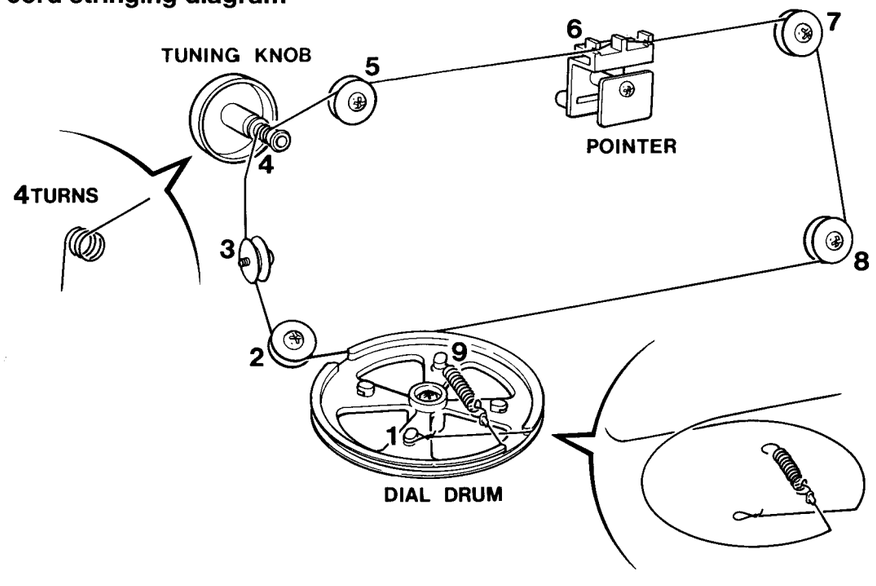


Figure 7. TAPE SPEED AND AZIMUTH ADJUSTMENT.

Seillaufplan

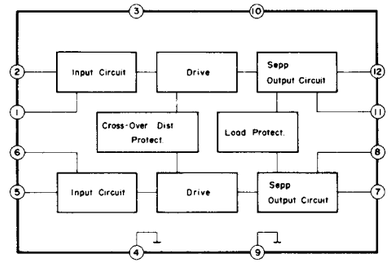
Dial cord stringing diagram



IC-Innenbeschaltung

IC internal circuit block diagram

AN7147



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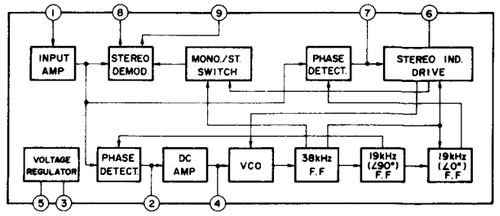

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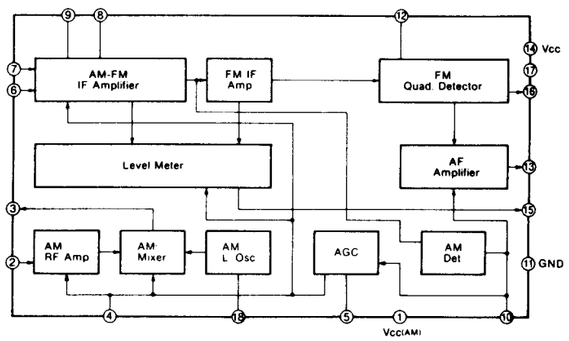

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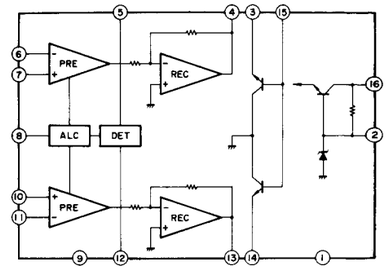

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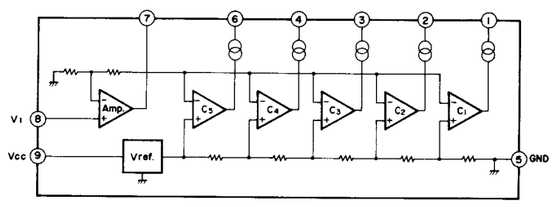

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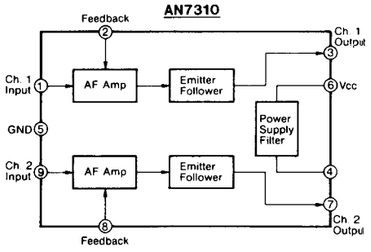
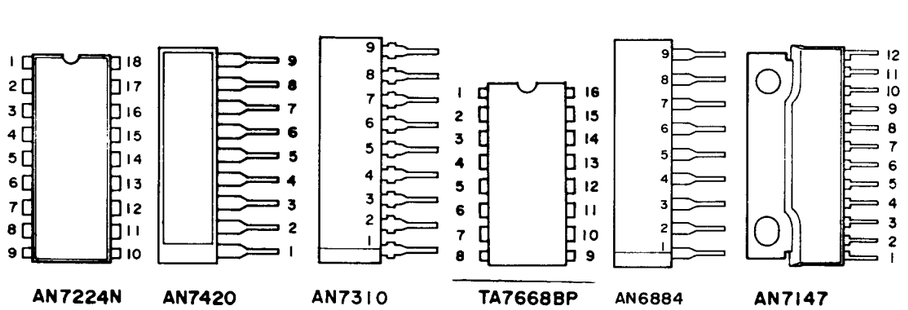
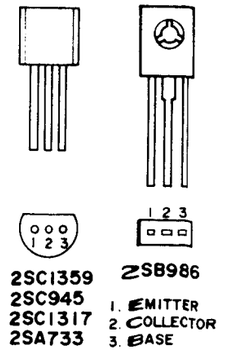


Anschlußschema Halbleiter

Semiconductor lead identification





Ersatzteilliste Plattenspieler/Gehäuse/Platinen

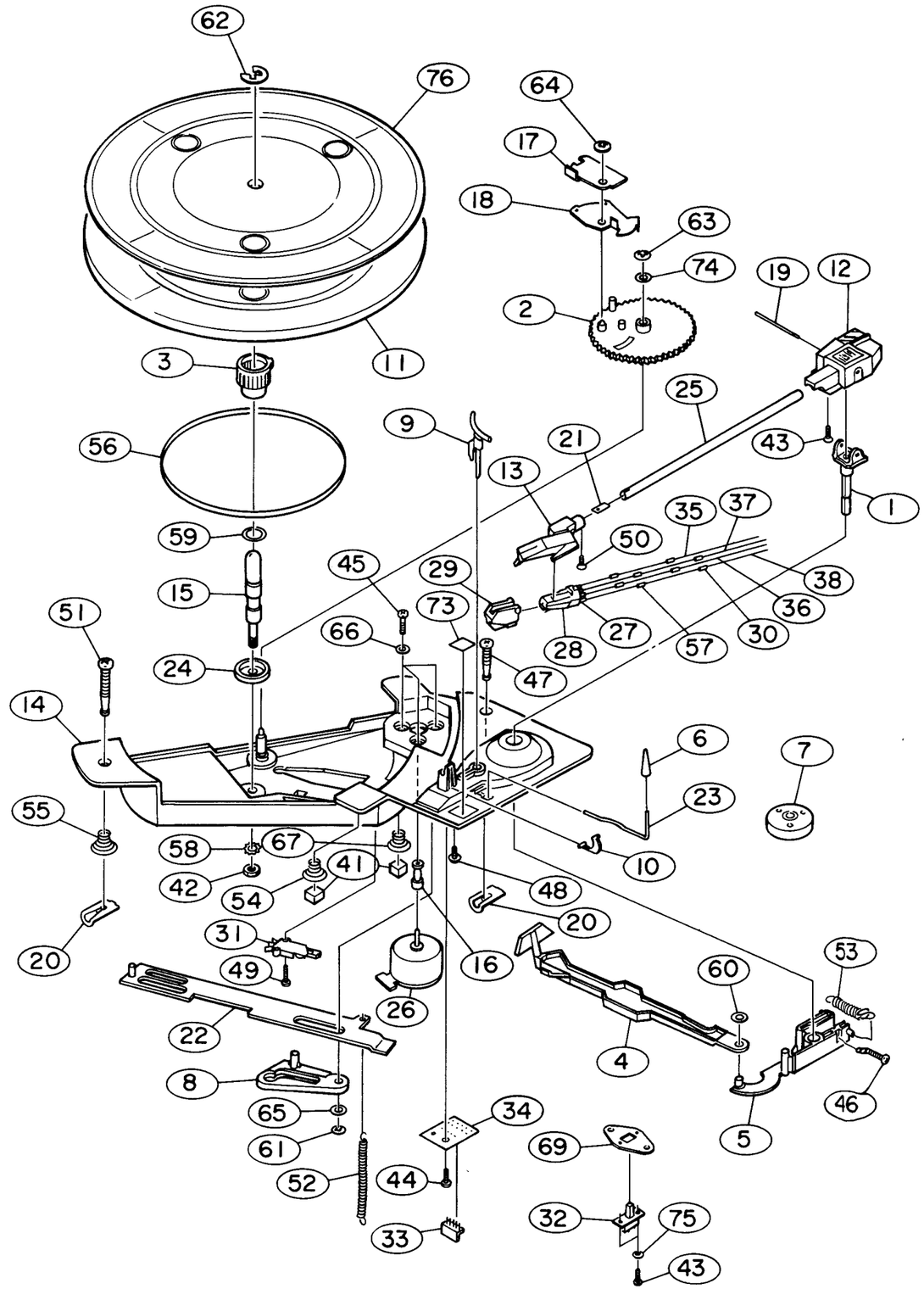
Spare parts list record player/housing/boards

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 321 00	Plattenspieler HP-H9	Player assembly	563	E 3
12 201 00	Kurvenrad	Cam gear	2	C 9
34 352 00	Starthebel	Starting lever	4	A 3
34 353 00	Rücksetzhebel kompl.	Return link	5	A 7
34 354 00	Knopf, Lifthebel	Knob	6	A 1
14 258 00	Zentrierstück	Adapter	7	A 3
44 146 00	Schalthebel	Push knob	8	A 3
34 356 00	Tonarmlift	Lifter	9	A 3
34 357 00	Clip Tonarmstütze	Clip	10	A 1
44 322 00	Plattenteller kompl.	Turntable	11+3	C 5
44 148 00	Plattentellerachse	Shaft	15	A 8
34 359 00	Motorpulley	Pulley	16	A 5
34 360 00	Lagerbolzen	Pin	19	A 0
34 361 00	Klammer Transp.-Sicherung	Transit spring	20	A 2
44 151 00	Haupthebel	Operating plate	22	A 8
34 362 00	Lifthebel	Lever	23	A 2
34 363 00	Antriebsmotor	Motor	26	C 3
34 364 00	Mikroschalter	Micro switch	31	C 7
34 365 00	Schalter Geschwindigkeit	Speed switch	32	A 7
34 366 00	Transportsicherungsschraube groß	Bolt large	47	A 3
34 367 00	Transportsicherungsschraube klein	Bolt small	51	A 3
34 368 00	Feder	Spring	52	A 2
34 369 00	Feder Lagerung	Spring	54	A 2
34 370 00	Feder Lagerung	Spring	55	A 2
34 371 00	Antriebsriemen	Belt	56	B 0
32 866 00	Lagerscheibe	Washer	59	A 1
32 868 00	Sicherungsring Teller	E-ring	62	A 0
44 153 00	Feder Lagerung	Spring	67	A 1
44 323 00	Plattentellerbelag	Turntable mat	76	B 8
44 239 00	Tonarm kompl. (mit System)	Tone arm	25+. .	D 1
32 846 00	Keramik-System SBD 52	Cartridge	27	B 6
32 847 00	Abtastnadel SBD 52	Stylus	28	B 2
32 848 00	Nadelschutz	Stylus cover		A 3
44 278 00	Frontblende	Front panel	501	C 7
44 279 00	Gehäuse Oberteil	Housing	502	B 6
44 280 00	Cassettenfach Tape 1 kompl.	Case tape 1	503	B 0
44 281 00	Cassettenfach Tape 2 kompl.	Case tape 2	504	B 0
44 282 00	Skala	Dial window	505	B 3
44 283 00	Blende Zählwerk	Counter window	506	B 0
44 238 00	Abdeckhaube 2300	Dust cover	509	C 6
37 813 00	Scharnier Abdeckhaube	Hinge	518	B 0
44 325 00	Gehäuserückwand	Back board	547	B 3
44 326 00	Seitenteil links	Side cabinet left	549	B 6
44 327 00	Seitenteil rechts	Side cabinet right	550	B 6
44 328 00	Gehäuseboden	Bottom board	551	B 7
44 284 00	Knopf Tasten Funktion	Knob function	510	A 3
44 285 00	Knopf Schieberegler EQ	Knob equalizer	511	A 3
44 286 00	Knopf, Geschwindigkeitswahlschalter	Knob speed switch	512	A 2
44 287 00	Knopf, Netzschalter	Knob power switch	513	A 1
44 288 00	Knopf Taste Cassette schmal	Knob cass.	515	A 1
44 289 00	Knopf Taste Cassette breit	Knob cassette large	516	A 2
44 290 00	Knopf, Abstimmung	Knob tuning	517	A 2
44 291 00	Feder Cassettenfach	Spring cassette case	552	A 1
44 292 00	Feder A/W-Schalter	Spring R/P switch	553	A 2
37 808 00	Dämpfer Cassettenfach	Dumper cassette	560	A 7
44 293 00	Zählwerk	Counter	526	B 1
44 294 00	Zählwerkriemen	Belt counter	533	A 2
44 295 00	Seilrad	Dial drum	545	A 3
22 926 00	Seilzugfeder	Spring dial drum	548	A 1
34 330 00	Netzschalter	Power switch	522	B 0
44 296 00	Tastensatz Funktion	Function switch	527	C 1
44 297 00	A/W-Schalter	R/P switch	524	A 7
40 232 00	Schieberegler Balance 100 K	Slide resistor balance	VR 07	A 9
44 298 00	Schieberegler 100 K Equalizer	Slide resistor equ.		A 8
44 299 00	Schieberegler 50 K, Lautstärke	Slide resistor volume	VR 08	A 8
44 305 00	Microphon-Buchse 3,5 mm	Mic jack	519	A 2
13 986 00	Buchse Kopfhörer HLJ 0305-01-040	Headphone jack	520	B 0
26 019 00	Buchse Antennen koaxial	Antenna jack	521	A 7
44 306 00	Buchsenleiste LS, CD, TV	Jack comp. assembly	546	B 7
44 300 00	Hauptplatine	Main board	530	F 9
44 301 00	Equalizerplatine	Equalizer board	531	D 3
44 302 00	LED-Platine, Music Level Meter	Lever board		C 6
44 303 00	Netztrafo-Platine	Power transformer board	532	D 1
40 035 00	FGM-Tuner FE407-G46	Tuner		D 5
44 304 00	Drehko	PVC	564	C 4

Explosionsdarstellung Plattenspieler

Exploded view record player

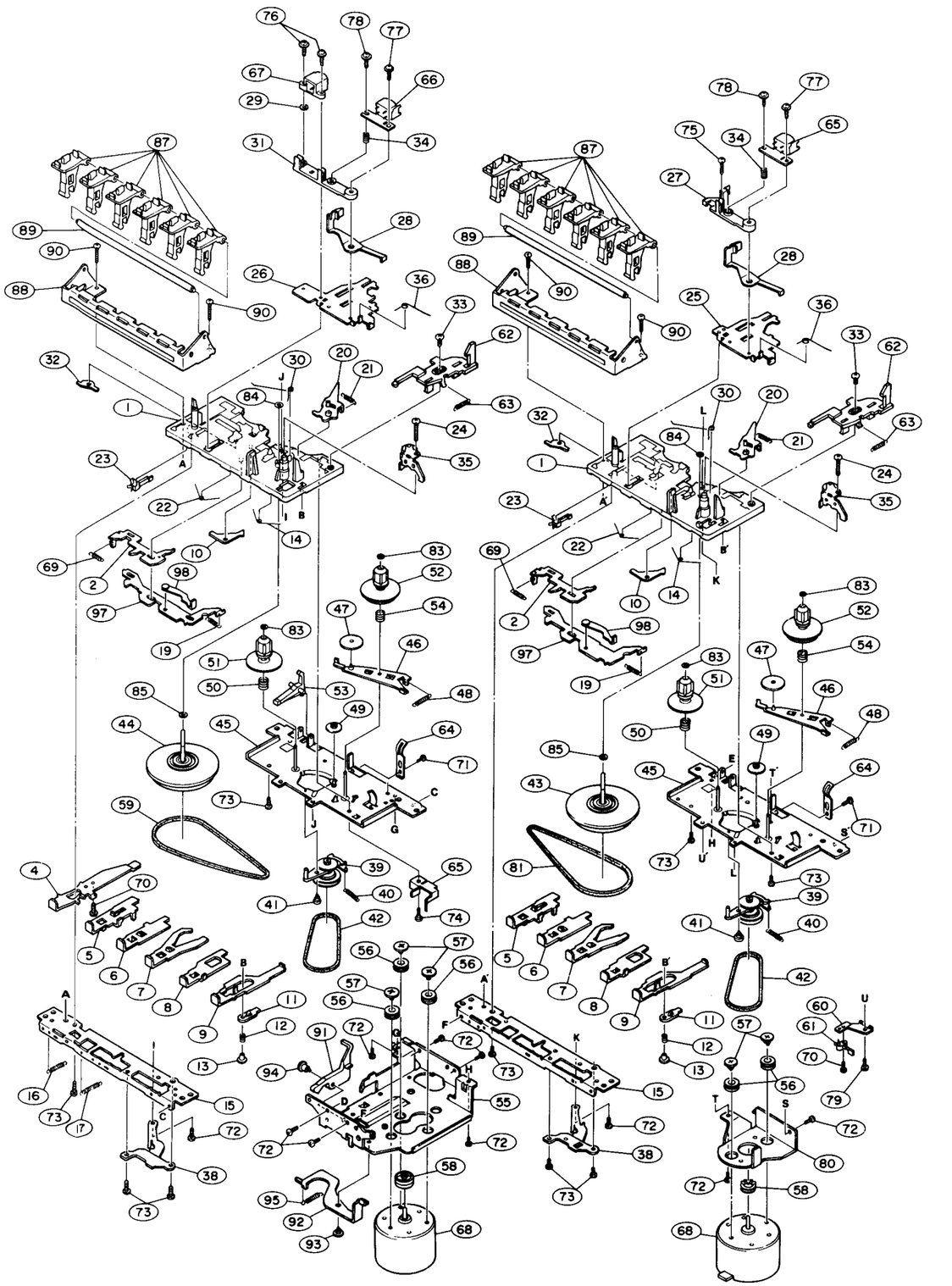
MODEL: HP-H9



Explosionsdarstellung Cassettenmechanik

Exploded view tape deck

MODEL: TN-21SW-1185



Ersatzteilliste Cassettenmechanik/elektrische Teile

Spare parts list cassette mechanism/electrical parts

Bestell-Nr./Part. No.	Bezeichnung	Description	Position	Preisgruppe
44 315 00	Cassettenmechanik kompl.	Cassette mechanism	558	D 9
44 316 00	Antriebsmotor Cassette 12 V	Cassette motor	68	C 2
44 317 00	Wiedergabekopf	Play head	65	B 5
34 208 00	A/W-Kopf	R/P head	66	C 3
34 210 00	Löschkopf	Erase head	67	B 6
40 815 00	Pausenrasthebel	Pause lever	11	A 0
32 421 00	Feder Pausenrasthebel	Spring pause lever	12	A 3
32 422 00	Stopper, Pausenrasthebel	Stopper pause	13	A 2
32 423 00	Feder, Tastenhebel (Stop, Pause)	Spring button lever	14	A 3
32 424 00	Feder Aufnahmehebel	Spring record lever	16	A 3
32 425 00	Feder Starthebel	Spring play lever	17	A 3
32 426 00	Feder Auslösehebel	Spring actuator	19	A 3
32 427 00	Feder Hebel	Spring auto lever	21	A 3
32 428 00	Feder Tastenhebel (Vor-, Rücklauf)	Spring button lever	22	A 3
32 429 00	Motorschaltkontakt	Switch leaf	23	A 9
32 474 00	Kopfträger (Wiedergabe)	Head base (play)	27	A 9
32 431 00	Stophebel kompl.	Sensing plate assembly	28	B 0
32 433 00	Feder Kopfträgerplatte	Spring head panel	30	A 3
32 430 00	Kopfträger	Head base (R/P)	31	A 9
32 435 00	Feder A/W-Kopf	Spring R/P head	34	A 3
32 436 00	Bandandruckrolle kompl.	Pinch roller assembly	35	B 6
32 437 00	Feder BA-Rolle	Spring pinch roller	36	A 3
32 438 00	Rutschkupplung kompl.	RF pulley assembly	39	B 5
32 439 00	Feder Rutschkupplung	Spring RF pulley	40	A 3
32 440 00	Schraube Rutschkupplung	Screw RF pulley	41	A 2
34 205 00	Riemen Rutschkupplung	Belt RF pulley	42	A 4
44 318 00	Schwungmasse kompl. Wiedergabe	Flywheel (play)	43	A 6
32 442 00	Schwungmasse kompl.	Flywheel (R/P)	44	A 6
32 444 00	Zwischenradzahnradarm	Take-up gear arm	46	B 0
32 445 00	Zwischenzahnrad	Take-up gear	47	A 5
32 446 00	Feder Zwischenzahnrad	Spring take-up gear	48	A 3
32 447 00	Zahnrad Vorlauf	FF gear	49	A 5
44 319 00	Feder, Wickelteller links	Spring back tension	50	A 0
32 449 00	Wickelteller links	Supply reel	51	B 2
32 450 00	Wickelteller rechts	Take-up reel	52	B 0
32 451 00	Aufnahmesperrhebel	Record safety lever	53	A 5
32 448 00	Feder Wickelteller rechts	Spring take up reel	54	A 3
32 453 00	Gummipuffer Motor	Rubber motor	56	A 2
32 454 00	Schraube Motor	Screw motor	57	A 2
44 320 00	Motorpulley	Pulley motor	58	A 1
40 818 00	Antriebsriemen	Belt main	59	A 3
34 213 00	Microschalter	Switch leaf	61	A 4
32 457 00	Gleithebel Eject	Slide lever eject	62	A 5
32 458 00	Feder Hebel Eject	Spring slide lever	63	A 3
32 459 00	Cassettenandruckfeder	Spring pack	64	A 5
34 347 00	Feder, Auslösehebel	Spring actuator	69	A 1
32 456 00	Antriebsriemen	Belt main	81	A 3
32 461 00	Sicherungsscheibe Wickelteller	P-washer reel	83	A 0
32 462 00	Sicherungsscheibe Schwungmasse	P-washer fly wheel	84	A 0
34 212 00	Tastenhebel	Operation lever	87	A 1
40 820 00	Stoßhebel	Kick lever	91	A 1
44 234 00	IC AN 7224 N		IC 1	B 0
34 624 00	IC AN 7420		IC 2	C 3
21 597 00	IC AN 7310		IC 3	B 6
26 241 00	IC TA 7668 AP		IC 4	B 6
44 235 00	IC AN 6884		IC 5	B 5
44 236 00	IC AN 7147		IC 6	C 2
12 093 00	Trans 2 SC 1359 B (3) 2 SC 1989 B		Q 01	A 3
13 763 00	Trans 2 SC 945 P			A 5
44 237 00	Trans 2 SC 2497 Q/R		Q 04	A 6
08 012 00	Trans 2 SC 1317		Q 5/30	A 5
26 219 00	Trans 2 SA 733 P		Q 6/7	A 4
02 127 00	Zenerdiode ZPD 9,1		D 001	A 3
02 440 00	Zenerdiode ZPD 3,9		D 002	A 5
06 227 00	Zenerdiode ZPD 12		D 006	A 3
02 442 00	Zenerdiode ZPD 20		D 007	A 2
11 241 00	Diode 1 N 4148			A 2
11 239 00	Diode 1 N 4002		D 8/9	A 1
44 324 00	Diode RL 252		10-13	A 1
24 534 00	Leuchtdiode LN 242 RP	LED red	1/2	A 2
44 307 00	Leuchtdiode LN 216 RP (rot)	LED red	Level	A 2
44 308 00	Leuchtdiode LN 416 YP (gelb)	LED yellow	Level	A 2
44 309 00	Leuchtdiode AN 221 RP (rot)	LED red	Zeig.	A 2
44 310 00	Ferritantenne	Antenna bar	528	B 0
44 311 00	Spule, Oszillator KW	Coil KW oscillator	T 01	B 2
34 271 00	Spule MW-Osz. L-077	Coil MW oscillator	T 02	A 3
34 272 00	Spule AM L-070	Coil AM	T 04	A 4
34 269 00	Spule FM L-040	Coil FM	T 05	A 5
44 312 00	Spule Oszillator Cassette	Coil oscillator tape	T 06	A 3
44 313 00	Filter	Filter	T 07	B 0
34 639 00	Entstörspule	Line filter	T 08	B 2
14 371 00	Keramikfilter SFE 10,7 6041 T	Ceramic filter SFE 10.7	CF 1/2	A 8
44 314 00	Keramikfilter SFU 468 B	Ceramic filter SFU 468	CF 3	A 4

Explosionsdarstellung Gehäuse

Exploded view cabinet